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10/003,065	11/02/2001	Danish Ali	GB 000160	4841

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EXAMINER

WONG, LINDA

ART UNIT PAPER NUMBER

2611

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/003,065

Applicant(s)

ALI, DANISH

Examiner

Linda Wong

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-3, 7 and 9 is/are rejected.  
7) ☒ Claim(s) 4-6, 8 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see Applicant's Remarks, filed 8/1/2006, with respect to the rejection(s) of claim(s) 1-3,7,9 under Easton et al in view of El-Tarhuni et al have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of El-Tarhuni et al (US Patent No.: 6201828) in view of Komatsu (US Patent No.: 6816542).

### ***Claim Objections***

2. Due to the amendments to claim 2, the objections as stated in the previous office action are withdrawn.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over El-Tarhuni et al (US Patent No.: 6201828) in view of Komatsu (US Patent No.: 6816542).
  - a. **Claim 1**, El-Tarhuni et al discloses

Art Unit: 2611

- a plurality of parallel signal paths (Fig. 3, labels 102,106,104,108,110,112,114,116), wherein each of the parallel signal paths including signal processing means (Fig. 3, labels 106,104,108,110,112,114),
- combining means (Fig. 3, label 116) for combining outputs from the signal paths (Col. 5, lines 36-40),
- the receiver further comprising code generating a PN code (Fig. 3, label 124) prior to the parallel signal paths (Fig. 3, labels 124,108,104,106) and
- the signal processing means in each of the parallel signal paths comprising a means for correlating the delayed signal with the PN code (Fig. 3, labels 106,104,108).
- Although El-Tarhuni et al fails to disclose the variable delay is within each parallel path, El-Tarhuni et al disclose prior art, wherein the delays are shown in each path (Fig. 1, label delta and Col. 3, lines 52-62).
- Although El-Tarhuni et al fails to disclose a receiving stage, an analog to digital converter, and a generation means for generating a filtered pilot code that provides a multibit interpolation of a generated pilot code, Komatsu discloses receiving a signal (Fig. 4, input to label 1 and Col. 1, lines 15-22),
- an analogue-to-digital converter (ADC) coupled to the receiving stage (Fig. 4, label 1), the ADC output being coupled to an input of each of a plurality of parallel signal paths (Fig. 4, labels 5,6,7, and 1), a despreader which "interpolates the spreading code to synchronize with the timing signal"

(Abstract). Thus, it would be obvious to one skilled in the art to incorporate a filtered pilot or spreading code into El Tarhuni et al's invention to improve reception characteristics. (Col. 3, lines 6-10)

- Although El-Tarhuni et al and Komatsu fails to disclose a means for recovering symbols from the combined outputs, means for recovering symbols from the combined output would be inherent within a spread spectrum communication system.

b. **Claim 9**, El-Tarhuni et al discloses a filter after combining. (Fig. 3, label 120)

4. **Claims 2 and 3** are rejected under 35 U.S.C. 103(a) as being unpatentable over El-Tarhuni et al in view of Komatsu as applied to claim 1 above, and further in view of Aue (US Patent No.: 20020051486).

a. **Claim 2**, El-Tarhuni et al discloses a signal deriving means coupled to the output of the code generation (Fig. 3, labels 124, 108, 104 and 106) and to the variable delay means (Fig. 3, label 102), wherein the signal deriving means derives an early-late timing error signal (Fig. 3, labels 108, 104, 106). The timing error signal is used to adjust the variable delay (Fig. 3, output from labels 108, 104 and 106 to input of label 122 and 102). Although El-Tarhuni does not disclose multiplying the delayed signal with the complex conjugate of the on-time correlation, Aue discloses a rake receiver, which calculates the early-late correlations and multiplies the complex conjugate of the on-time correlation with a filtered or delayed input signal, wherein the multiplied output is coupled to

a combiner. (See page 1, paragraph [0001], lines 4-9 and Fig. 9, labels Rake-Finger 1-K and Combiner) Thus, it would be obvious to one skilled in the art to incorporate a multiplier for multiplying the complex conjugate of the on-time correlation to a delayed signal to generate "the receiving signal with the greatest possible signal-to-noise ratio." (page 2, paragraph [0021]) Although Aue does not explicitly state finding the complex conjugate of the amplitude and phase, the complex conjugate inherently detects/provides the conjugates for the amplitude and phase of the received signal. In regards to the motivation for combination, Aue's invention reduces power consumption by 50% (paragraph 0027), which inherently reduces cost as disclosed by both El-Tarhuni et al (El-Tarhuni et al, Col. 2, lines 36-39) and Easton et al (Easton et al, Col. 2, lines 4-6).

- b. **Claim 3** inherits the limitation of a filtered PN code as recited in claim 1, but claim 1 does not recite all the limitations of claim 3. El-Tarhuni et al discloses a code generation means comprising early, on-time and late outputs (Fig. 3, labels 124, "-1/2", "0", and "+1/2") and a signal deriving means comprising a first, second and third correlators (Fig. 3, labels 108, 104, 105), wherein the first input to the correlators is the output from the variable delay means (Fig. 3, label 102 and output from label 102 to labels 108, 104, 106), and the second input is either an early, on-time or late output from the code generation means (Fig. 3, labels "-1/2", "0", and "+1/2") and compute offset means having inputs to all the correlators but computing the offset between the early and late correlations.

(Fig. 3, outputs from labels 110, 112, and 114, 116 and Col. 5, lines 36-57)

Although El-Tarhuni et al does not disclose a correlator for outputting a correlation between the complex conjugate of the on-time correlation and the delayed signal from the variable delay, Aue discloses multiplying or correlating the complex conjugate of the on-time signal with a delayed signal. (page 1, paragraph [0001], lines 4-9 and Fig. 9, labels Rake-Finger 1-K and Combiner) Thus, it would be obvious to one skilled in the art to incorporate a multiplier for multiplying the complex conjugate of the on-time correlation to a delayed signal to generate "the receiving signal with the greatest possible signal-to-noise ratio." (page 2, paragraph [0021]) Although Aue does not explicitly state finding the complex conjugate of the amplitude and phase, the complex conjugate inherently detects/provides the conjugates for the amplitude and phase of the received signal.

5. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over El-Tarhuni et al, Komatsu, and Aue as applied to claims 2,3 above, and further in view of Bultan et al (US Publication No.: 20040057506).

- a. **Claim 7**, Although El-Tarhuni et al, Komatsu, and Aue fail to teach correlators including integrate and dump stages, Bultan et al discloses a rake receiver comprising late, early and punctual signals, all correlated respectively with first, second and third correlators, wherein the correlators comprises integrate and dump stages. (Fig. 2, labels Late, Early, Punctual, all inputted in to correlators,

and labels 12a, 12b and 21) Thus, it would be obvious to one skilled in the art to include integrate and dump stages after correlation to maintain the bandwidth and damping ratio of the loop regardless of changes with input signal power level. (page 1, paragraph [0008])

***Allowable Subject Matter***

6. **Claims 4-6 and 8** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
8. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the



Art Unit: 2611

mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Kim can be reached on (571) 272-3039. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Linda Wong

KEVIN KIM  
PRIMARY PATENT EXAMINER

Handwritten signature of Kevin Kim, dated 4/16/06.